CLAIMS

1. A mixing and distribution device for fixing paste, particularly for multicomponent bone cement, comprising a box-like body (11) that forms internally a receptacle (12) that is closed in an upper region by a detachable and substantially fluid-tight lid (13), inside which means (18) for mixing the components of the fixing paste are accommodated, said mixing means (18) being coupled to a piston (19) that forms, inside said receptacle (12), a venting chamber toward said lid (13) and a mixing chamber (21) toward the bottom of said receptacle (12), said mixing chamber (21) being connected to a channel (35) for distributing bone cement, which is controlled by valve means (37), said venting chamber being instead connected to a venting channel (33), which can be functionally associated with suction means, said device being characterized in that said mixing means (18) are constituted by longitudinally elongated mixing blades (57) that are arranged so as to slide within complementary through slots (58) formed in said piston (19), a rotation pivot (24) being further locked coaxially on said piston (19) and being arranged so that it can slide through a corresponding fluid-tight hole (25) formed in said lid (13), said rotation pivot (24) being associable with corresponding rotation means (30) that can be operated by a user during the mixing of the multicomponent paste, said device (10) further comprising a handgrip (40) for a single hand of the user, with which means (43) for the translational motion of said rotation pivot (24) together with said piston (19) toward the bottom of said receptacle (13) are associated, said means being actuatable with the same hand associated with said handgrip (40), said venting and mixing chambers (21) being mutually connected for the passage of gaseous fluids.

2. The device according to one or more of the preceding claims, characterized in that said handgrip (40) is constituted by a pistol grip (41) that is rigidly coupled to said lid (13).

3. The device according to one or more of the preceding claims,

characterized in that said means (43) for the translational motion of said rotation pivot (24) comprise a ratchet mechanism that is constituted by a plurality of annular bulges (45) that have a sawtooth transverse profile in which the teeth are inclined so as to converge toward said lid (13), two complementarily shaped teeth (46) engaging on said annular bulges (45) and being arranged monolithically on the first end of a first-class lever (47), elastic return means (49) being provided between the fulcrum and said second end of said lever (47) and acting between said lever (47) and said pistol grip (41).

4. The device according to claim 3, characterized in that said elastic return means (49) comprise a leaf-spring element (50), which is elastically deformable and cantilevers out from said second end of said lever (47) toward said first end.

5. The device according to claims 3 or 4, characterized in that a collar (51) is present on said lid (13), said fluid-tight hole (25) being formed coaxially to said collar, tabs (52) for preventing reversibility of the translational motion of said pivot (24) being provided on said collar (51), said tabs (52) being elastically deformable and being provided with teeth that are shaped complementarily to said annular bulges (45) of said pivot (24) so as to prevent said pivot from rising accidentally.

6. The device according to one or more of the preceding claims, characterized in that a retention element (55) is associated with said pivot (24) and has a C-shaped part designed to be coupled reversibly by elastic deformation with an annular slot (54) formed on said pivot (24) at the beginning of said annular bulges (45), said retention element (55) being coupled to said annular slot (54) only during the mixing of the multicomponent paste.

7. The device according to one or more of the preceding claims, characterized in that the end of said mixing blades (57) that is directed toward said lid (13) has a head (59) that is wider than the width of the

complementary slots (58).

8. The device according to one or more of the preceding claims, characterized in that the coupling of said mixing blades (57) to said slots (58) has passages for the outflow of the air and gas from said mixing chamber (21) toward said venting chamber.

9. The device according to one or more of the preceding claims, characterized in that the length of said mixing blades (57) is substantially equal to the internal length of said receptacle (12).

10. The device according to claim 9, characterized in that means (14) for detachable fixing to said box-like body (11) protrude from the rim of said lid (13).

11. The device according to claim 10, characterized in that said fixing means (14) are constituted by teeth (15) of the snap-fit type, to be coupled by elastic deformation within corresponding locking cavities (16) formed through a perimetric tab (17) that protrudes laterally from said cylindrical body (11).

12. The device according to one or more of the preceding claims, characterized in that said piston (19) has a first cylindrical portion (22) and a second portion (22a) that has a conical shape toward the bottom of said receptacle (12).

13. The device according to claim 12, characterized in that the vertex region of said second conical portion (22a) has a coaxial protrusion that is substantially elongated downward.

14. The device according to claim 12 or 13, characterized in that circumferential pockets (60) are provided on said first cylindrical portion (22) of said piston (19) in order to accommodate corresponding scraper rings (61) for the side wall of said receptacle (12) or, as an alternative, sealing gaskets.

15. The device according to claim 12 or 13, characterized in that circumferential pockets (60) for accommodating corresponding sealing

gaskets are formed on said first cylindrical portion (22) of said piston (19).

16. The device according to one or more of the preceding claims, characterized in that said locking means (23) comprise a first shank (26) formed at one end of the pivot (24), two studs (27) protruding from the lateral surface of said first shank (26) on opposite sides, a seat (28) being formed axially in said piston (19) and being shaped complementarily to said first shank (26), openings (29) that are complementary to said two studs (27) being provided on the side walls of said first shank, the mutual coupling of said studs (27) and said openings (29) occurring by elastic deformation of the walls of said seat (28).

17. The device according to one or more of the preceding claims, characterized in that the free end of said pivot (24) is constituted by a second shank (32).

18. The device according to claim 17, characterized in that said rotation means (30) are constituted by a crank (31) that is coupled detachably to said second shank (32).

19. The device according to claim 17, characterized in that said rotation means (30) are constituted by an electric motor or a pneumatic motor, a spindle for coupling to said second shank (32) being associable with said motors.

20. The device according to claim 16, characterized in that an annular pocket for accommodating a corresponding gasket is formed proximate to said first shank (26).

21. The device according to one or more of the preceding claims, characterized in that said venting channel (33) is constituted by a tube (34) that protrudes from the upper portion of said lid (13).

22. The device according to one or more of the preceding claims, characterized in that said distribution channel (35) protrudes from the bottom of said receptacle (12) by way of a nozzle (36) that is controlled by said valve means (37), which consist of a plug valve (38).

23. The device according to one or more of the preceding claims, characterized in that it comprises a stand (62) in which it is possible to insert said box-like body (11) temporarily, with its bottom directed downward, in order to mix the multicomponent paste.

24. The device according to one or more of the preceding claims, characterized in that it comprises a collar-funnel (63) to be arranged temporarily in abutment against said perimetric tab (17) during the pouring of the components of the multicomponent paste.

25. The device according to one or more of the preceding claims, characterized in that it comprises an extension nozzle (64) of the syringe-needle type, to be coupled to the nozzle (36) in order to precisely direct the paste during distribution on the parts to be fixed.

26. The device according to one or more of the preceding claims, characterized in that it is entirely made of plastic material.

27. The device according to one or more of the preceding claims, characterized in that the fulcrum of said lever (47) is formed by a hinge constituted by a hole (47a), which is formed in said pistol grip (41) and in which there is a pivot that is rigidly coupled to said lever (47), said hole (47a) having an oval shape.

28. The device according to claim 27, characterized in that the major axis of said oval hole (47a) is substantially oriented along the extension of said pistol grip (41).